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Process for the preparation of nicotinaldehydes

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The invention relates to a process for the preparation of nicotinaldehydes by reduction of the corresponding nicotinic acid morpholinamides.

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Nicotinaldehydes are important intermediates or end products in industrial organic chemistry. Appropriately substituted derivatives, such as, for example, arylnicotinaldehydes, are, inter alia, valuable intermediates for the synthesis of highly value-added end products or are themselves such end products, in particular for crop protection, such as, for example, fungicides, insecticides, herbicides or pesticides, or for the preparation of highly pharmaceutically active substances.

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There is therefore interest in an extremely economical process for the production of these compounds on a large industrial scale

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As an unstable oxidation state between alcohol and carboxylic acid, aldehydes are generally accessible with difficulty. Aromatic aldehydes in particular easily oxidise to the corresponding carboxylic acids or disproportionate under alkaline conditions to give alcohol and carboxylic acid. In the reductive preparation of nicotinaldehyde derivatives, reduction to the dihydropyridine occurs as an additional side reaction.

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There are preparation methods known from the literature which describe selective reduction of carboxylic acid derivatives as far as the aldehyde stage. These methods generally require cooling of the reaction mixture in order to minimise over-reductions.

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Special methods for the reduction of nicotinic acid derivatives are also known. Thus, for example, DE-A 100 05 150 describes a process for the preparation of 5-aryl nicotinaldehydes by reduction of the corresponding 5-aryl nicotinic acids by means of catalytic hydrogenation.

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